

Remarks

Claims 1-22 were originally filed. Claims 23-32 were previously presented.

Claims 2, 21, and 23-26 were previously canceled without prejudice or disclaimer.

Claims 8, 9, 12, 22, 27, and 32 are currently canceled without prejudice or disclaimer.

No new claims are added.

Claims 1, 4, 11, 13, 15, and 30 are currently amended without introducing new matter. Support for the amendments to the claims can be found throughout the specification, claims, and drawings as originally filed. For example, support for a vessel with two or more zones can be found at least at pages 14, 15, and 16 of the specification as originally filed. Support for baffles in the vessel can also be found at pages 14, 15, and 16 of the specification.

Entry and reconsideration of the claims is proper because the presented amendments thereto involve subject matter recited in one or more previously pending dependent claims.

Claims 1, 3-7, 10-11, 13-20, and 28-31 remain pending for examination, with claims 1, 11, and 17 being in independent form.

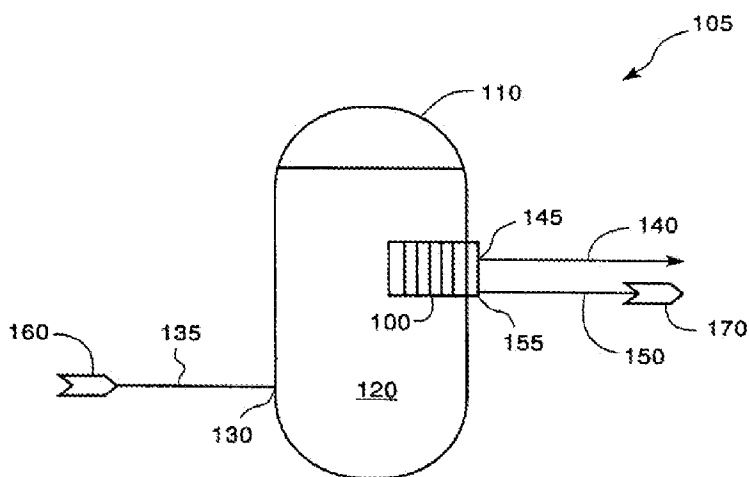
Rejections under 35 U.S.C. § 103

Claims 1, 3-20, 22, and 27-32 were rejected under 35 U.S.C. § 103(a) as would have been obvious over the disclosure of Liang et al. in U.S. Patent No. 7,572,359 B2 (hereinafter "Liang 359") in view of the disclosure of Batchelder et al. in U.S. Patent No. 6,126,805 (hereinafter "Batchelder"), and if necessary, in view of the disclosure of Stoddard in U.S. Patent No. 2,912,372 (hereinafter "Stoddard") and/or the disclosure of Liang et al. in 5,292,422 (hereinafter "Liang 422").

Applicants disagree that the respective subject matter of each of claims 1, 3-20, 22, and 27-32 would have been obvious over Liang 359 in view of Batchelder, and further in view of Stoddard and/or Liang 422.

Liang 359, with reference to FIG. 1 (reproduced below), discloses a system 105 for purifying a liquid. (Liang 359 at column 3, lines 43-44.) System 105 comprises an electrical purification apparatus 100, positioned within a pressure vessel 110, which contains a fluid 120 from a point of entry 160. (Liang 359 at column 3, lines 44-50.) Ion-depleted fluids, e.g., purified water, from purification apparatus 100 may be transferred to a point of use 170. (Liang 359 at column 3, lines 55-63.)

FIG. 1



Notably, Liang 359 does not disclose or suggest a method of producing treated water comprising introducing a first portion of water to be treated from a point of entry into a pressurized vessel while introducing a second portion of the water to be treated from the point of entry into an electrochemical device, and storing at least a portion of the treated water in a treated water zone of the pressurized vessel, wherein the treated water zone of the pressurized vessel is defined by at least one baffle.

Rather, Liang 359 discloses delivering the purified liquid to a point of use 170, which can be a spigot, a reservoir, or a unit operation in which a liquid is needed, such as in a cooling system, a refrigeration system, or a manufacturing plant, bottles, tanks, or a building such as a house or an apartment complex. (Liang 359 at column 4, lines 40-48.)

Liang 359 also does not disclose or suggest a method of producing treated water comprising introducing a portion of water to be treated from a point of entry into a first zone

of a vessel, and introducing at least a portion of treated water, produced from an electrodeionization device, into a second zone of the vessel, wherein the second zone is separated from the first zone by at least one baffle. Further, Liang 359 does not disclose or suggest a water treatment system comprising a water storage vessel fluidly connected to a point of entry, wherein the water storage vessel comprises a plurality of zones with water of differing water quality levels.

At column 1, line 62-column 2, line 19 and at column 4, line 42-column 5, line 2, Batchelder was relied on for teaching electrodeionization devices that are operated near or below the limiting current density to mitigate the precipitation and deposition of minerals. Batchelder, at column 8, lines 34-47 and at column 2, lines 35-38 and lines 45-51, was further relied on for teaching operating the anion exchange membranes of an electrodialysis or electrodeionization device to have reduced water-splitting capacity and to operate the cation exchange membranes of such device to have a relatively limited water-splitting capacity.

Batchelder, however, fails to cure the deficiencies of Liang 359. Batchelder does not disclose or suggest a method of producing treated water comprising introducing a first portion of water to be treated from a point of entry into a pressurized vessel while introducing a second portion of the water to be treated from the point of entry into an electrochemical device, and storing at least a portion of the treated water in a treated water zone of the pressurized vessel, wherein the treated water zone of the pressurized vessel is defined by at least one baffle. Batchelder also does not disclose or suggest a method of producing treated water comprising storing a portion of water to be treated from a point of entry in a first zone of a vessel, and storing at least a portion of treated water, produced from an electrodeionization device, in a second zone of the vessel, wherein the second zone is separated from the first zone by at least one baffle. Further, Batchelder also does not disclose or suggest a water treatment system comprising a water storage vessel fluidly connected to a point of entry, wherein the water storage vessel comprises a plurality of zones with water of differing water quality levels. Significantly, none of the references teaches or suggests a vessel having one or more baffles that define zones in the vessel. Indeed, one skilled in the art would not have modified any of the cited references to incorporate a vessel having at least

one baffle that defines zones in the vessel and would have sought to avoid zones of water quality to ensure a uniform level of water quality.

Thus, the prima facie case of obviousness based on a combination of Liang 359 with Batchelder is improper for failing to disclose or suggest each and every limitation in the particular manner claimed.

Liang 422 at Fig. 5 (reproduced below) and at column 10, line 38-column 11, line 18 was optionally relied on for teaching domestic appliances to replace home softeners and for teaching diverted flow to tank/reservoir/vessel 180 and recirculation.

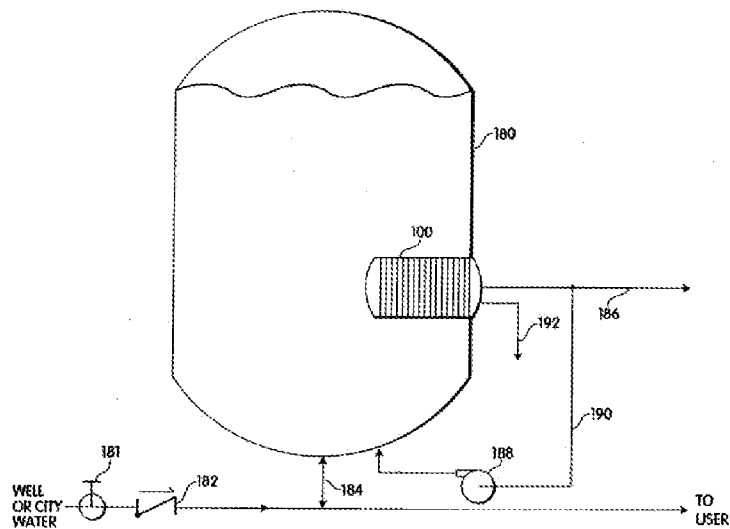


Fig. 5

Like Liang 359 and Batchelder, Liang 422 does not disclose or suggest a method of producing treated water comprising introducing a first portion of water to be treated from a point of entry into a pressurized vessel while introducing a second portion of the water to be treated from the point of entry into an electrochemical device, and storing at least a portion of the treated water in a treated water zone of the pressurized vessel, wherein the treated water zone of the pressurized vessel is defined by at least one baffle.

Liang 422, instead, teaches recirculating in water without regard for a treated water zone. Further, surge tank 180 does not disclose utilizing at least one baffle to at least partially define a treated water zone therein.

Liang 422 also does not disclose or suggest a method of producing treated water comprising introducing a portion of water to be treated from a point of entry into a first zone of a vessel, and introducing at least a portion of treated water, produced from an electrodeionization device, into a second zone of the vessel, wherein the second zone is separated from the first zone by at least one baffle. Liang 422 also does not disclose or suggest a water treatment system comprising a water storage vessel fluidly connected to a point of entry, wherein the water storage vessel comprises a plurality of zones with water of differing water quality levels.

Thus, any prima facie case of obviousness based on Liang 422, alone or in any combination with Liang 359 and Batchelder is improper for failing to disclose each and every limitation in the particular manner claimed.

Stoddard, at column 1, lines 25-35, and at column 5, lines 51-column 6, line 47, was relied on for teaching water treatment through an electrochemical, softening unit to provide water to household appliances, such as dishwashers.

Stoddard, instead, discloses water treatment methods designed to convert raw water containing salts into corresponding aqueous acid and base solutions.

Thus, Stoddard, like Liang 359, Batchelder, and Liang 422, does not disclose or suggest a method of producing treated water comprising introducing a first portion of water to be treated from a point of entry into a pressurized vessel while introducing a second portion of the water to be treated from the point of entry into an electrochemical device, and storing at least a portion of the treated water in a treated water zone of the pressurized vessel, wherein the treated water zone of the pressurized vessel is defined by at least one baffle. Also like Liang 359, Batchelder, and Liang 422, Stoddard does not disclose or suggest a method of producing treated water comprising storing a portion of water to be treated from a point of entry in a first zone of a vessel, and storing at least a portion of treated water, produced from an electrodeionization device, in a second zone of the vessel, wherein the second zone is separated from the first zone by at least one baffle. Stoddard also does not disclose or suggest a water treatment system comprising a water storage vessel fluidly connected to a point of entry, wherein the water storage vessel comprises a plurality of zones with water of differing water quality levels. Further, as noted above, none of the references teaches or suggests a vessel having one or more baffles that define zones in the vessel and

one skilled in the art would not have modified any of the cited references to incorporate a vessel having at least one baffle that defines zones in the vessel to ensure a uniform level of water quality.

Thus, any prima facie case of obviousness based on Stoddard, alone or in any combination with Liang 359, Batchelder and/or Laing 422 is improper for failing to disclose each and every limitation in the particular manner claimed.

Independent claim 22 and dependent claims 8, 9, 12, and 32 are canceled thereby rendering moot the rejection as to these claims.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) of claims 1, 3-20, 22, and 27-32 as would have been obvious over Liang 359 in view of Batchelder, and in view of Stoddard and/or Liang 422 is respectfully requested.

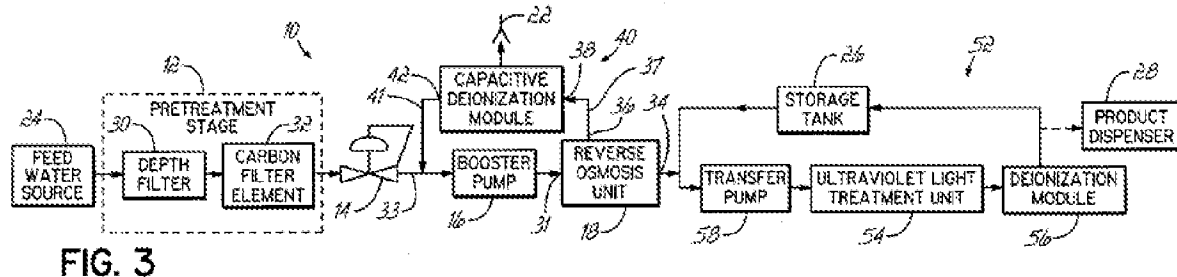
Claims 1, 8-12, 17-18, 22, 27, and 29 were rejected under 35 U.S.C. § 103(a) as would have been obvious over the disclosure of one of Liang 422¹ or Willman et al., in U.S. Patent Application Publication No. 2004/0118780 A1 (hereinafter “Willman”), in view of Batchelder, and, if necessary, in view of Stoddard.

Applicants respectfully disagree that the respective subject matter of each of claims 1, 8-12, 17-18, 22, 27, and 29 would have been obvious over the disclosure of Liang 422 in view of Batchelder, and, if necessary, in view of Stoddard. Applicants also respectfully disagree that the respective subject matter of each of claims 1, 8-12, 17-18, 22, 27, and 29 would have been obvious over the disclosure of Willman in view of Batchelder, and, if necessary, in view of Stoddard.

Willman, at FIG. 3 (reproduced below) and at pages 16, 21-22, 29, and 32, was relied on for teaching introducing portions of water from a point of entry into vessels, reservoirs, tank 26, and in series or parallel flow into an electrodeionization device 56, for storing water in tank 26, and for distributing water to points of use in a household, which is inferred because the water can be drinking water. Willman is further relied on for teaching applying

¹ The alternative rejection of claims 1, 8-12, 17-18, 22, 27, and 29 is assumed to be based on a combination of Liang 422 with Batchelder and, if necessary, Stoddard, rather than on Liang 422 alone.

an electric current or field uniformly or non-uniformly, which allegedly implies a gradient and a controller as well as a power supply.



As noted above, none of Liang 422, Batchelder, and Stoddard discloses or suggests a method of producing treated water comprising introducing a first portion of water to be treated from a point of entry into a pressurized vessel while introducing a second portion of the water to be treated from the point of entry into an electrochemical device, and storing at least a portion of the treated water in a treated water zone of the pressurized vessel, wherein the treated water zone of the pressurized vessel is defined by at least one baffle. Also, none of Liang 422, Batchelder, and Stoddard discloses or suggests a method of producing treated water comprising storing a portion of water to be treated from a point of entry in a first zone of a vessel, and storing at least a portion of treated water, produced from an electrodeionization device, in a second zone of the vessel, wherein the second zone is separated from the first zone by at least one baffle; or a water treatment system comprising a water storage vessel fluidly connected to a point of entry, wherein the water storage vessel comprises a plurality of zones with water of differing water quality levels. Willman does not disclose or suggest any of the noted deficiencies. As noted, none of the references teaches or suggests a vessel having one or more baffles that define zones in the vessel and one skilled in the art would not have modified any of the cited references to incorporate a vessel having at least one baffle that defines zones in the vessel to ensure a uniform level of delivered water quality.

Thus, the prima facie case of obviousness based on any combination of Liang 422 in view of Batchelder and Stoddard or based on any combination of Willman in view of

Batchelder and Stoddard is improper for failing to disclose each and every limitation in the particular manner claimed.

Applicants further note that none of the cited references teaches or suggests a controller configured to regulate the electrical current below a limiting current density. Contrary to what has been averred, Batchelder does not disclose such a feature; instead Batchelder seeks to match the water splitting characteristics of the various anionic and cationic materials in the device. Because Batchelder seeks to match the water splitting characteristics of the various components of the device, one skilled in the art would have recognized that Batchelder avoids utilizing a controller to regulate the current to below the limiting current density. Indeed, one skilled in the art would also have recognized that Batchelder's approach could potentially result in higher overall transport phenomena by utilizing improved materials to match the extent of water splitting when compared to configurations that reduce the electrophoretic driving forces. Thus, one skilled in the art would not have considered Batchelder to teach a controller that limits the current to below the limiting current density.

Independent claim 22 and dependent claims 8, 9, and 12 are canceled thereby rendering moot the rejection as to these claims.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) of claims 1, 8-12, 17-18, 22, 27, and 29 as would have been obvious over Liang 422 in view of Batchelder and Stoddard; and over Willman in view of Batchelder and Stoddard is respectfully requested.

Claims 4-7, 13-16, 19-20, 28, and 30-32 were rejected under 35 U.S.C. § 103(a) as would have been obvious over one of Liang 422² or Willman in view of Batchelder and

² The alternative rejection of claims 4-7, 13-16, 19-20, 29, and 30-32 is assumed to be based on a combination of Liang 422 with Batchelder, Stoddard, and Rela, rather than on Liang 422 alone.

Stoddard, and further in view of the disclosure of Rela in U.S. Patent No. 6,607,668 B2 (hereinafter “Rela”).³

Applicants respectfully disagree that the respective subject matter of each of claims 4-7, 13-16, 19-20, 28, and 30-32 would have been obvious over the disclosure of Liang 422 in view of Batchelder, Stoddard, and Rela. Applicants also respectfully disagree that the respective subject matter of each of claims 4-7, 13-16, 19-20, 28, and 30-32 would have been obvious over the disclosure of Willman in view of Batchelder, Stoddard, and Rela.

Rela, at column 4, lines 43-67 and at column 10, lines 28-40, was relied on for teaching a water treatment system that includes a prefilter, a reverse osmosis device, and an electrodeionization device, as in Hark, and in which various water properties are sensed/measured which are used in controlling water flow rates to end use points, and in controlling the amount of current applied to the electrodeionization device.

Rela, however, does not disclose or suggest a method of producing treated water comprising introducing a first portion of water to be treated from a point of entry into a pressurized vessel while introducing a second portion of the water to be treated from the point of entry into an electrochemical device, and storing at least a portion of the treated water in a treated water zone of the pressurized vessel, wherein the treated water zone of the pressurized vessel is defined by at least one baffle. Also, Rela does not disclose or suggest a method of producing treated water comprising storing a portion of water to be treated from a point of entry in a first zone of a vessel, and storing at least a portion of treated water, produced from an electrodeionization device, in a second zone of the vessel, wherein the second zone is separated from the first zone by at least one baffle. Further, like Liang 359, Batchelder, Liang 422, Stoddard, and Willman, Rela does not disclose or suggests a water treatment system comprising a water storage vessel fluidly connected to a point of entry, wherein the water storage vessel comprises a plurality of zones with water of differing water quality levels.⁴ Again, none of the references teaches or suggests a vessel having one or more baffles that define zones in the vessel; instead, one skilled in the art would not have modified any of the cited references to incorporate a vessel having at least one baffle that

³ The rejection of claims 4-7, 13-16, 19-20, 29, and 30-32 appears to rely on Hark, which is presumably U.S. Patent No. 4,808,287 (referred to herein as “Hark”).

⁴ Hark also fails to disclose or suggest these claimed features.

defines zones in the vessel to avoid zones of water quality and ensure a uniform level of water quality.

Therefore the alleged prima facie case of obviousness as to claims 4-7, 13-16, 19-20, 28, and 30-31 based on Liang 422 in view of Batchelder, Stoddard, and Rela; or based on Willman in view of Batchelder, Stoddard, and Rela, is improper for failing to teach or suggest each and every limitation in the particular manner recited.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) of claims 4-7, 13-16, 19-20, 28, and 30-31 as would have been obvious over Liang 422 in view of Batchelder, Stoddard, and Rela; and over Willman in view of Batchelder, Stoddard, and Rela is respectfully requested.

Conclusion

In view of the foregoing Amendments and Remarks, this application is in condition for allowance; a notice to this effect is respectfully requested. If the examiner believes that the application is not in condition for allowance, the examiner is requested to call Applicants' attorney at the telephone number listed below.

If this Response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time for entry and consideration of this paper and any other paper. If there is a fee occasioned by this Response, including an extension fee that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762 (ref. no. I0168-708019).

Respectfully submitted,
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